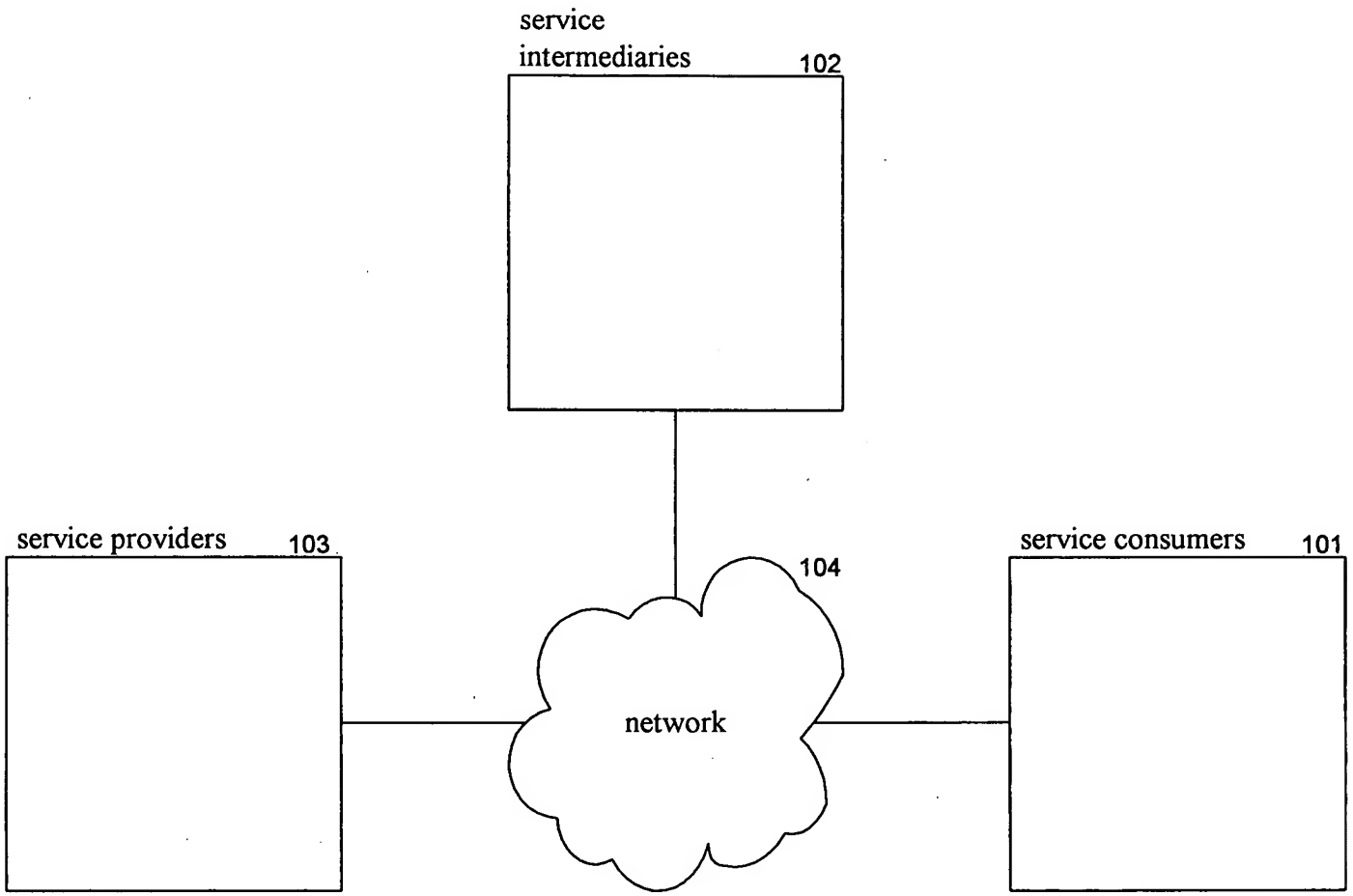
service
intermediaries
102
service providers
103
104
service consumers
101
network

FIG. 1

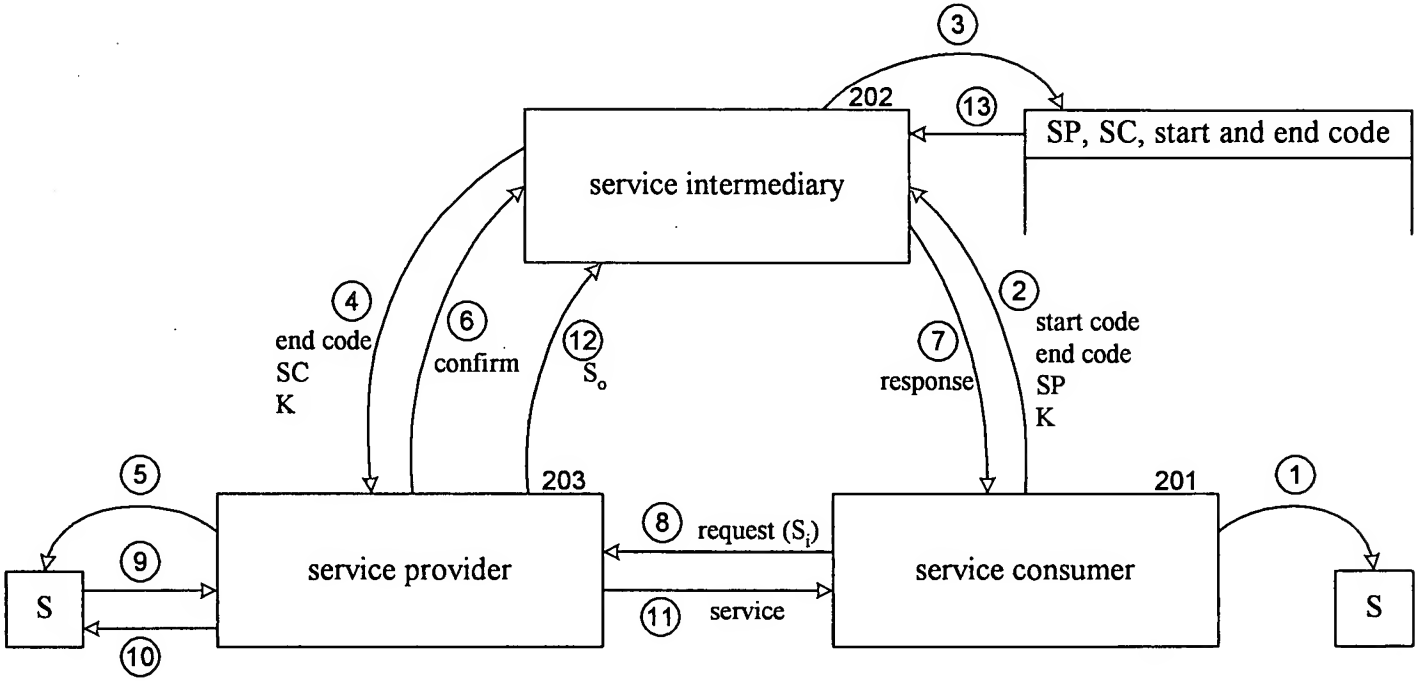
3
202
13
SP, SC, start and end code
service intermediary
4
end code
SC
K
6
confirm
12
S_o
7
response
2
start code
end code
SP
K
5
203
201
1
8
request (S_i)
9
service provider
service consumer
S
S
11
service
10

FIG. 2

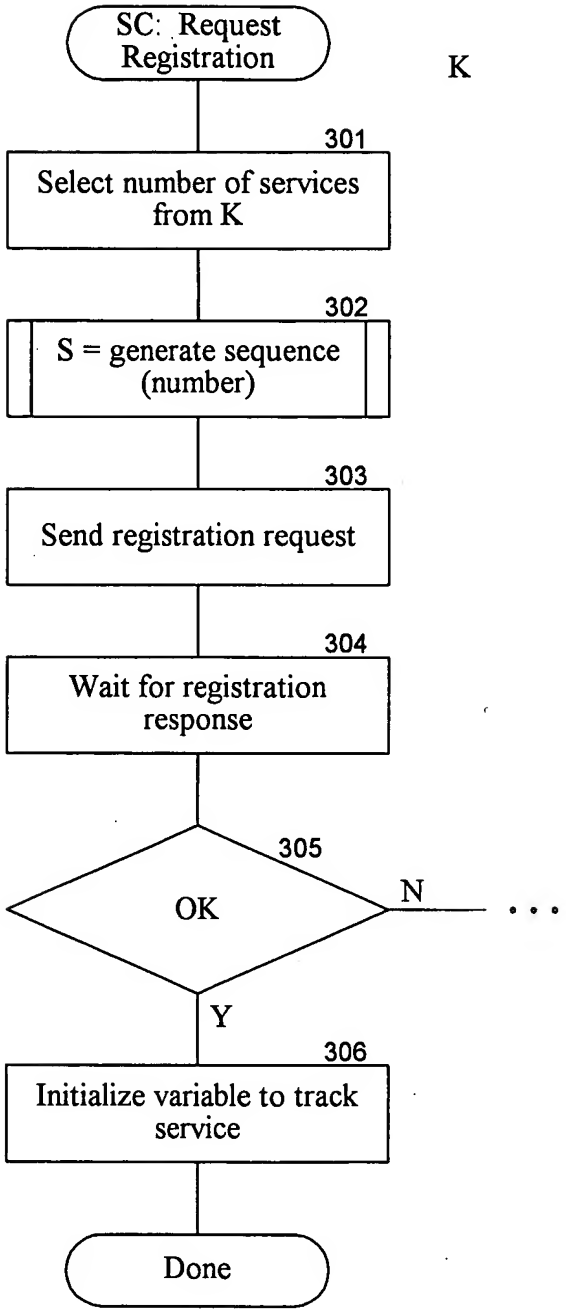
SC: Request Registration
K
301
Select number of services from K
302
S = generate sequence (number)
303
Send registration request
304
Wait for registration response
305
OK
N
Y
306
Initialize variable to track service
Done

FIG. 3

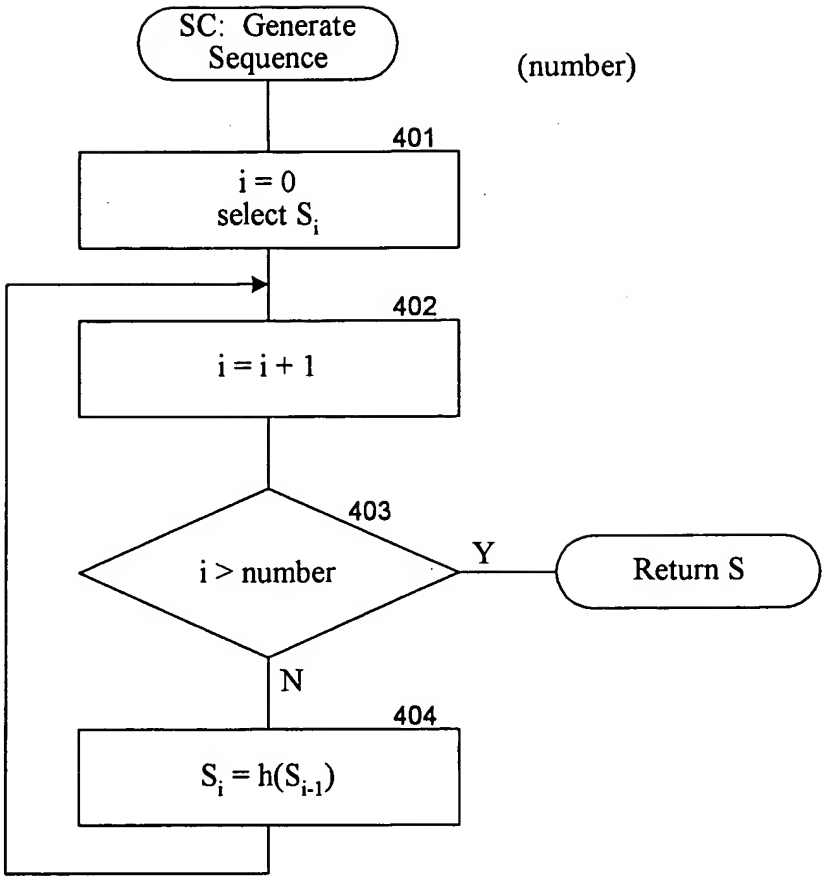
SC: Generate Sequence
(number)
401
i = 0
select S_i
402
i = i + 1
403
i > number
Y
Return S
N
404
$S_i = h(S_{i-1})$

FIG. 4

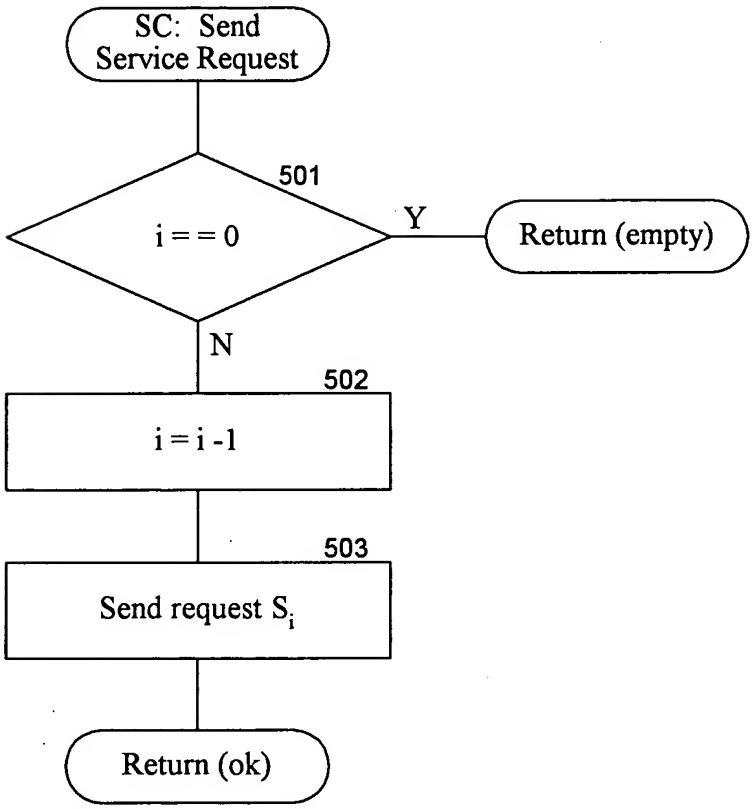
SC: Send Service Request
501
i = = 0
Y
Return (empty)
N
502
i = i -1
503
Send request S_i
Return (ok)

FIG. 5

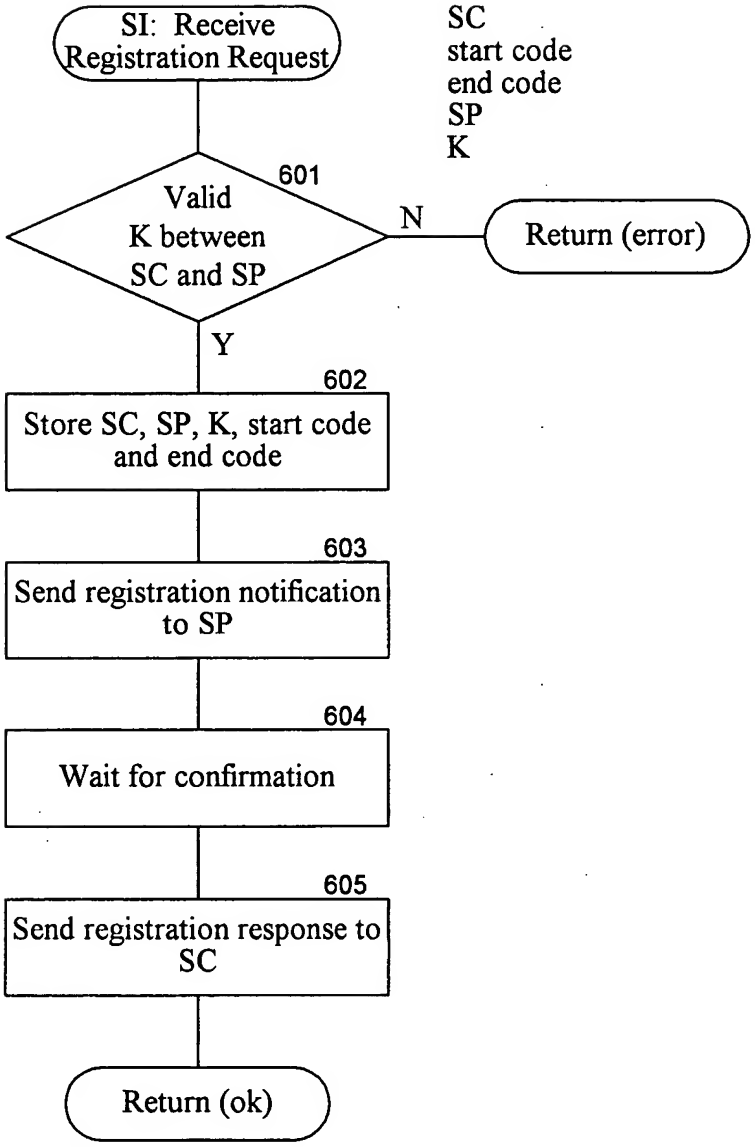
SI: Receive Registration Request
SC
start code
end code
SP
K
601
Valid K between SC and SP
N
Return (error)
Y
602
Store SC, SP, K, start code and end code
603
Send registration notification to SP
604
Wait for confirmation
605
Send registration response to SC
Return (ok)

FIG. 6

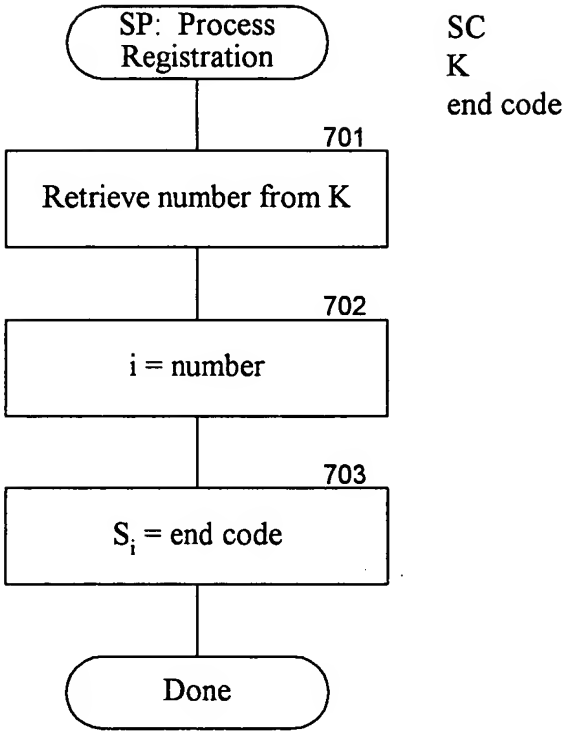
SP: Process Registration
SC
K
end code
701
Retrieve number from K
702
i = number
703
S_i = end code
Done

FIG. 7

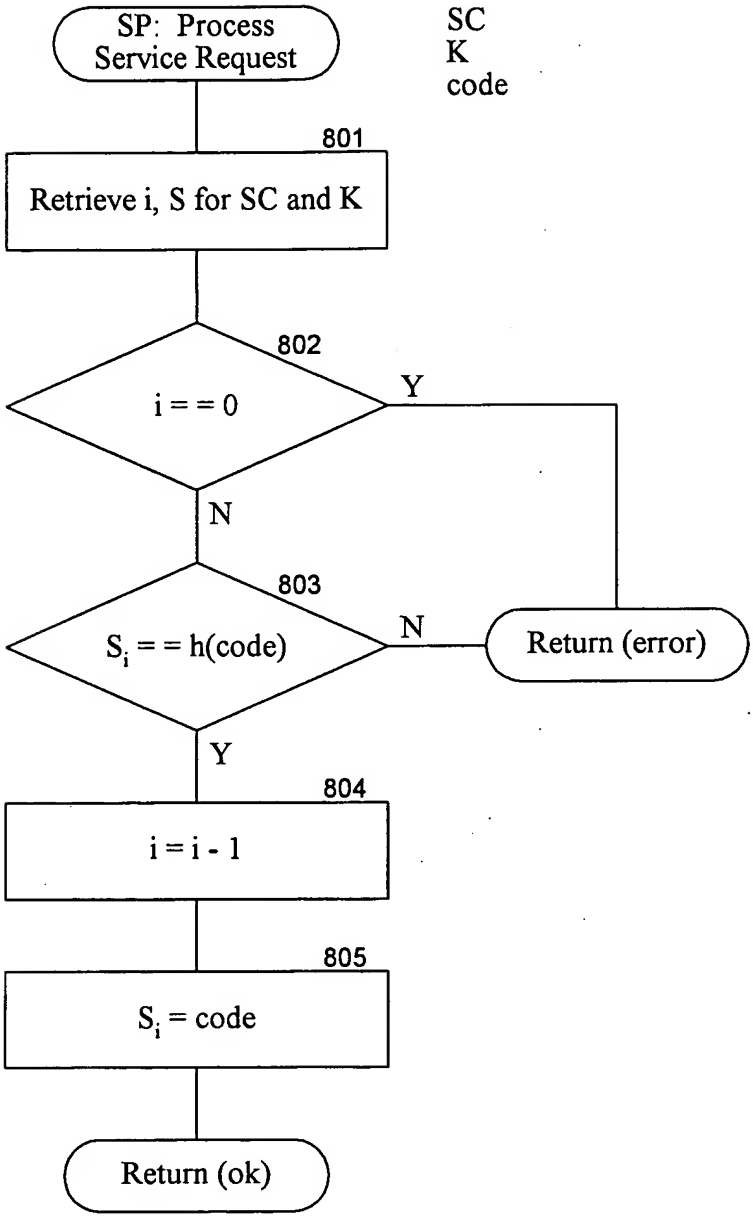
SP: Process Service Request
SC
K
code
801
Retrieve i, S for SC and K
802
i = = 0
Y
N
803
S_i = = h(code)
N
Return (error)
Y
804
i = i - 1
805
S_i = code
Return (ok)

FIG. 8

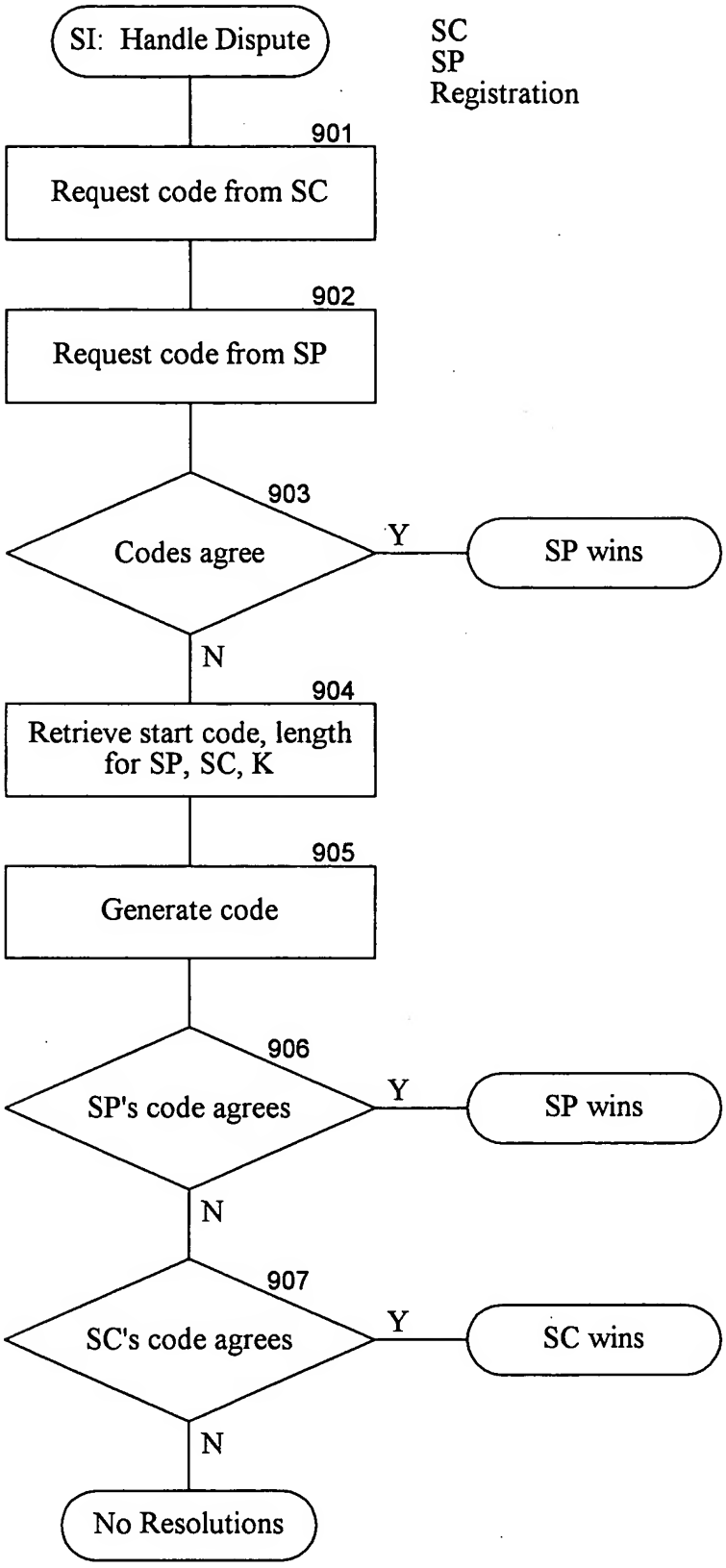
SI: Handle Dispute
SC
SP
Registration
901
Request code from SC
902
Request code from SP
903
Codes agree
Y
SP wins
N
904
Retrieve start code, length for SP, SC, K
905
Generate code
906
SP's code agrees
Y
SP wins
N
907
SC's code agrees
Y
SC wins
N
No Resolutions

FIG. 9

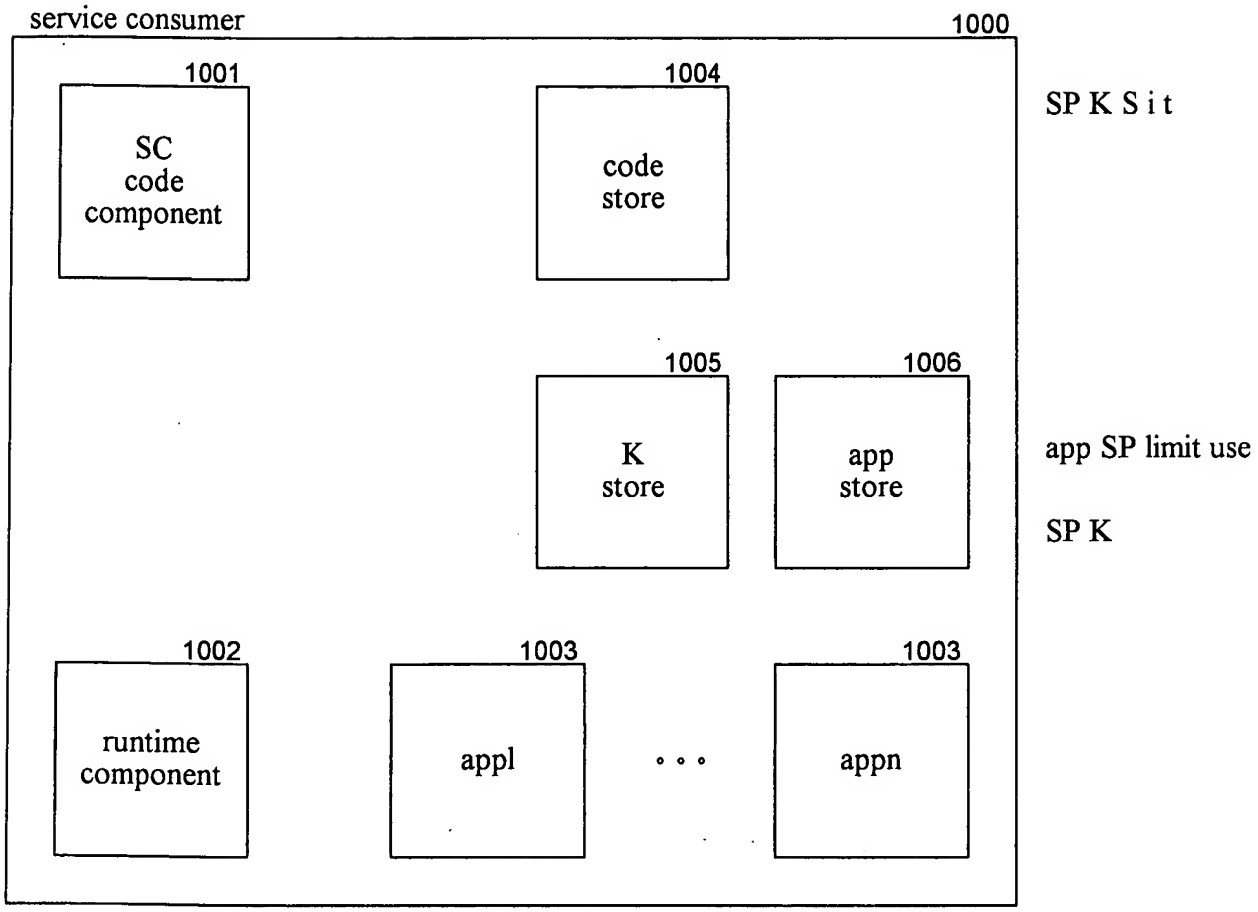
service consumer
1000
1001
SC
code
component
1004
code
store
SP K S i t
1005
K
store
1006
app
store
app SP limit use
SP K
1002
runtime
component
1003
appl
• • •
1003
appn

FIG. 10

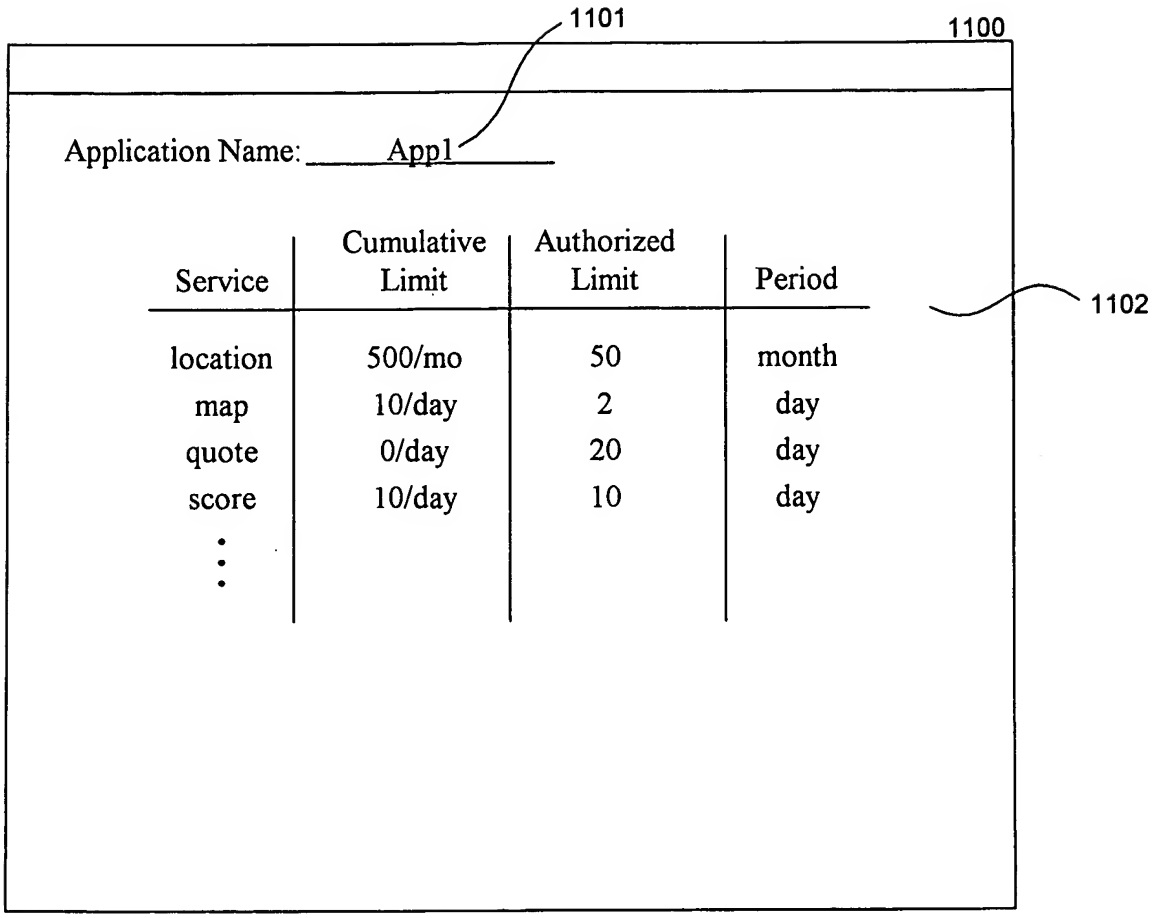
1101
1100
Application Name: App1
Service
Cumulative Limit
Authorized Limit
Period
1102
location
500/mo
50
month
map
10/day
2
day
quote
0/day
20
day
score
10/day
10
day

FIG. 11

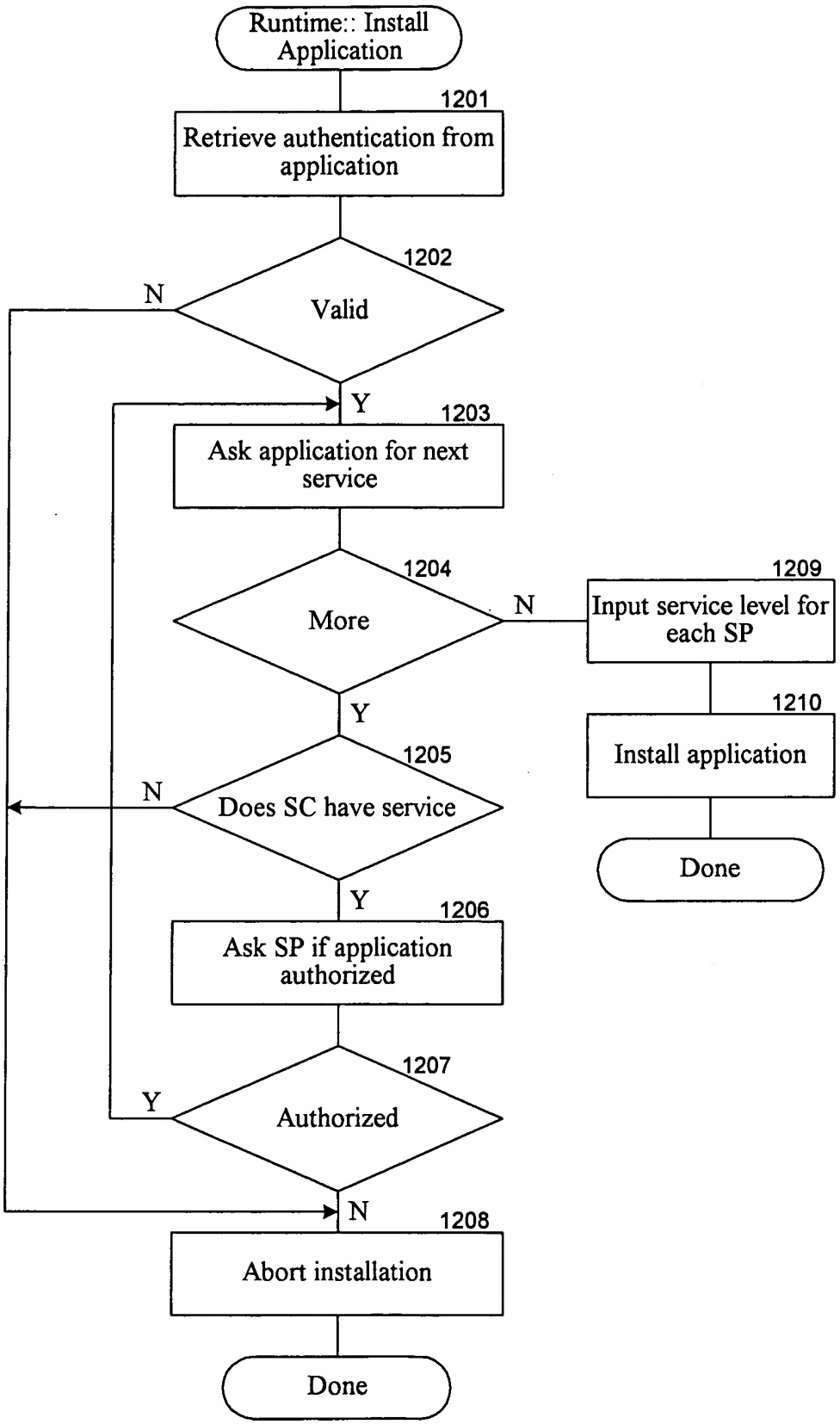
Runtime:: Install Application
1201
Retrieve authentication from application
1202
Valid
N
Y
1203
Ask application for next service
1204
More
N
1209
Input service level for each SP
Y
1210
Install application
1205
Does SC have service
N
Y
Done
1206
Ask SP if application authorized
1207
Authorized
Y
N
1208
Abort installation
Done

FIG. 12

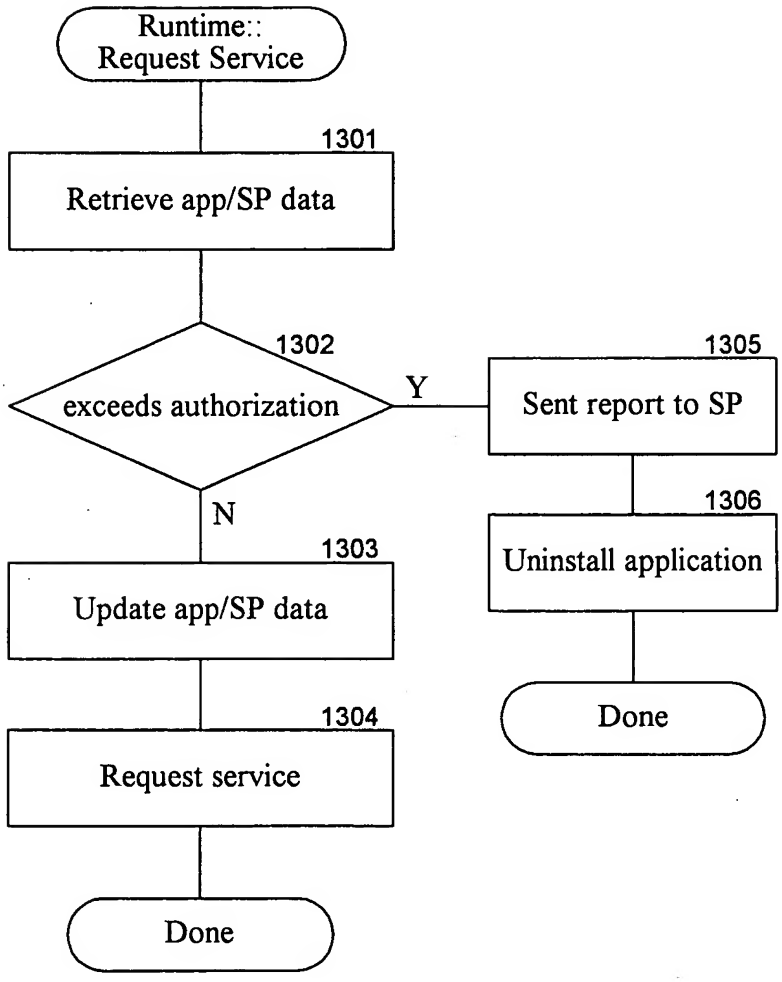
Runtime::
Request Service
1301
Retrieve app/SP data
1302
exceeds authorization
Y
1305
Sent report to SP
1306
Uninstall application
Done
N
1303
Update app/SP data
1304
Request service
Done

FIG. 13